

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE.—LIII.

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Eustroma nubilata Packard.

Egg. Elliptical, flattening, depression and truncation all slight and rounded; uniformly and neatly hexagonally reticulate, the lines narrow, moderate, distinctly raised, a little waved and not rigid, suggesting the stellate sculpture. Pale yellow, turning red; size $.8 \times .6 \times .5$ mm.

Stage I. Head rounded, erect, pale whitish with numerous black dots, mouth brown. Body moderate, slender, finely annulate, feet normal, no shields. Pale whitish; a broad gray smoky subdorsal band, faint, clouded; similar but narrower subventral and medio-ventral ones, waved, clouded. Tubercles small, conical, brown; setae club-shaped, short, pale.

Stage II. Head squarish bilobed, sordid white, thickly checkered with black, leaving a pale streak on lobe above; width, .6 mm. Body cylindrical, moderate, sordid greenish white with waved brown lines. Dorsal line straight, expanded on the anterior edges of the segments; subdorsal straight above, subconfluent with the waved lateral line below, forming loops about tubercle iii; traces of upper subventral and broad lower subventral bands. Tubercles small, black, raised; setae short, brownish; thoracic feet brown-black, abdominal ones blackish bordered outwardly.

Stage III. Head bilobed, free, pure white with contrasted black angular dots filling the median suture broadly and covering the sides of the lobes, leaving a short streak above, the area about eyes and clypeus white; width .85 mm. Body moderate, normal, gray from blackish streaks and lines heavily overlaid on a whitish ground. Tubercles white, round, ii and iv large and prominent, the others comparatively inconspicuous. Segments finely annulate posteriorly. Feet pale, dotted with black. No distinct lines; dorsal line narrow, dark; traces of waved subdorsal and lateral white; subventer and venter with broader pale lines. Setae from black hair dots, pale brown, thick, flattened at tip. Later the black marks become reddish brown, a pale white streak is about tubercle ii and a black shade at tubercle iv.

Stage IV. Head white with black dots as before but thicker, covering most of the surface except a narrow streak across lobes to clypeus; width 1.4 mm. Body moderate, flatly outstretched, sordid gray; tubercle ii white, contrasted, an oblique pale shade from it down and anterior, to the pale subventral area. Other tubercles white, less conspicuous, iv with a black circle. The ground color is dotted with blackish and white, indicating waved subdorsal and lateral lines. Feet gray and blackish, the anal pair large, triangular, with a white line before. Setae short, thick, somewhat club-shaped, pale.

Larvae from Kaslo, British Columbia; they fed on *Epilobium*.